

NEW FERDINAND RESERVOIR

Dubois County

2005 Fish Management Report

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EXECUTIVE SUMMARY

- A standard lake survey was conducted at New Ferdinand Reservoir on July 5 and 6, 2005. An aquatic vegetation survey was conducted on July 27.
- The Secchi disk reading was 1.0 ft. No submersed aquatic vegetation was collected. Cattail spp. was the only emergent plant observed. A thick planktonic algae bloom was present during the survey.
- A total of 1,203 fish, representing six species and one hybrid, was sampled during the survey that weighed approximately 74.87 lbs. Bluegill ranked first by number, followed by largemouth bass, warmouth, and redear sunfish.
- Bluegill density is very high, which is the opposite of what is expected in a lake void of submersed aquatic vegetation. High densities such as this would normally lead to slow growth. However, due to the high nutrient level, bluegill are exhibiting average to above average growth. The primary contributor to the high density is the 2003 year class, which accounts for 68% of the total bluegill sample. Gill netting sampled larger bluegill than electrofishing. Seventy percent of the bluegill collected in gill nets were 6.0 in or longer, with the longest measuring 9.5 in. The largemouth bass population is low compared to prey availability while growth remains average for all ages.
- The DFW should maintain the 14-in minimum size limit and five fish bag limit on largemouth bass at New Ferdinand Reservoir.
- The district fisheries biologist should monitor New Ferdinand Reservoir monthly (June through September) in 2006 to verify the reoccurrence of a planktonic algae bloom.
- Resurvey New Ferdinand Reservoir in 2007 to evaluate bluegill and largemouth bass abundance and growth.
- The City of Ferdinand should submit a watershed diagnostic plan to the DFW Lake and River Enhancement program (LARE), a LARE biologist can be reached at 317-233-1484.

INTRODUCTION

New Ferdinand Reservoir is a 10.9-acre impoundment located 1.5 mi east of the town of Ferdinand (Figure 1). The lake was built in 1954 and was once used as a water supply lake. A gravel boat ramp provides boat access and shoreline fishing areas are present along the dam and near the ramp. There are no boat launching or access fees.

The lake's fishery is regulated by Indiana's standard length and bag limit regulations. The last survey in 1985 showed the fishery at New Ferdinand Reservoir to be in good shape. Stock indices indicated the bluegill population was balanced ($PSD = 45$), while the largemouth bass population had a slightly higher proportion of 8 to 12 in bass than what is recommended for a balanced fishery ($PSD = 26$). Bluegill growth was average and largemouth bass growth was at the low end of the district average.

METHODS

The current survey was conducted on July 5 and 6, 2005, as part of Division of Fish and Wildlife (DFW) Work Plan 202478, to monitor the fishery and aquatic vegetation abundance. Some of the lake's physical and chemical characteristics were measured according to standard guidelines (Indiana DFW 2001). Due to equipment problems, the dissolved oxygen profile could not be taken. Submersed aquatic vegetation was sampled on July 27, 2005, using guidelines written by Pearson (2004). A GPS device was used to record the location of all the sampling sites.

Fish collection effort consisted of pulsed DC night electrofishing with two dippers for 0.57 h, two experimental-mesh gill net lifts, and two trap net lifts. All fish collected were measured to the nearest 0.1 in TL. Average weights for fish by half-inch groups for Fish Management District 7 were used to estimate the weight of all collected fish. Scale samples were taken from a subsample of bluegill, largemouth bass, and redear sunfish for age and growth analysis. Proportional stock density (PSD) and relative stock density (RSD) were only calculated for bluegill since too few largemouth bass were sampled to achieve reliable stock density figures (Anderson and Neumann 1996). The bluegill fishing potential (BGFP) index was used to assess the lake's bluegill fishing quality (Ball and Tousignant 1996).

RESULTS

The Secchi disk reading at New Ferdinand Reservoir was 1.0 ft. No submersed aquatic vegetation was collected. Cattail spp. was the only emergent plant observed. A dense planktonic algae bloom was present, giving the water a pea soup green color, in early July during the fish survey and in late July during the vegetation survey.

A total of 1,203 fish, representing six species and one hybrid, was sampled during the survey that weighed approximately 74.87 lbs. Bluegill ranked first by number and weight followed by largemouth bass. Other species sampled include 27 warmouth, 5 black crappie, 2 yellow bullhead, and 16 hybrid sunfish.

A total of 1,075 bluegill was sampled that weighed 39.93 lbs. They ranged in length from 0.7 to 9.5 in. Relative abundance was 89% by number and 53% by weight. The bluegill electrofishing catch rate (excluding age 0) was 1,668.4/h. The gill net and trap net catch rates were 28.0/lift and 12.0/lift. Growth for ages 1 and 2 was above the district average and ages 3 through 5 were average. The bluegill PSD was 1. The bluegill RSD7 and RSD8 were both 0. The BGFP index classified bluegill fishing as “marginal” with a score of 10 out of a possible 40.

Fifty-seven largemouth bass were sampled that weighed 24.43 lbs. They ranged in length from 1.6 to 14.5 in. Relative abundance was 5% by number and 33% by weight. The largemouth bass electrofishing catch rate (excluding age 0) was 80.7/h. The gill net and trap net catch rates were 0.5/lift each. Growth was average for all ages.

Twenty-one redear sunfish were sampled that weighed 4.69 lbs. They ranged in length from 4.0 to 9.1 in. Relative abundance was 2% by number and 6% by weight. The redear electrofishing catch rate was 21.1/h. The gill net and trap net catch rates were 1.0/lift and 3.5/lift. Growth was average for all ages.

DISCUSSION

Bluegill density is very high, which is the opposite of what is expected in a lake void of submersed aquatic vegetation. The high densities are a result of reduced predation risk caused by the turbid water (Miner and Stein 1996). The reduced predation leads to increased recruitment, thus increased densities. High densities such as this would normally lead to slow growth. However, due to the high nutrient levels, bluegill are exhibiting average to above average growth. The primary contributor to the high density is the 2003 year class (age 2),

which accounts for 68% of the total bluegill sample. Age-2 bluegill were collected at an electrofishing catch rate of 1,205.3/h and averaged 3.5 in (var = 0.302) in length. The PSD value indicates the bluegill population contains a much higher proportion of 3.0 to 6.0 in fish than what is recommended for a balanced fishery (20 to 60). The PSD value may be artificially depressed by the 2003 year class. Gill netting revealed larger bluegill than the electrofishing results. Seventy percent of the bluegill collected in gill nets were 6.0 in or longer, with the longest measuring 9.5 in. A fisheries survey should be conducted in 2007 to determine if bluegill recruitment remains high and if growth is affected.

Largemouth bass may have been under represented in the sample due to water temperatures and turbidity. Gill net catch rates of large bluegill suggest that fish were using deeper water at the time of the survey. Only two largemouth bass were collected that met or exceeded the legal length limit indicating harvest could be playing a role in limiting the largemouth bass population. A 2007 fisheries survey is recommended to gather more information about the fishery and help determine the best management option. The current largemouth bass 14-inch minimum size limit and five fish bag limit should remain in place.

During the fisheries and vegetation survey, there was a dense planktonic algae bloom. Planktonic algae has shaded out rooted aquatic vegetation and, if left in the current state, could result in fish kills during extended periods of warm and overcast days. The cause of the algae bloom is most likely excessive nutrient runoff from farms or confined feeding operations within the watershed. To verify the reoccurrence of a planktonic algae bloom, the district fisheries biologist should monitor New Ferdinand Reservoir monthly (June through September) in 2006. Excessive nutrient loading needs to be reduced; to accomplish this the Town of Ferdinand should submit a watershed diagnostic plan to the DFW Lake and River Enhancement program (LARE). Funding for approved LARE projects are done on a cost-share basis. For questions and more information on submitting LARE proposals, a LARE biologist can be reached at 317-233-1484. Once the watershed issues are corrected, planktonic algae blooms will be reduced and rooted aquatic vegetation should re-establish.

RECOMMENDATIONS

- The DFW should maintain the 14-in minimum size limit and five fish bag limit on largemouth bass at New Ferdinand Reservoir.
- The district fisheries biologist should monitor New Ferdinand Reservoir monthly (June through September) in 2006 to verify the reoccurrence of a planktonic algae bloom.
- Resurvey New Ferdinand Reservoir in 2007 to evaluate bluegill and largemouth bass abundance and growth.
- The Town of Ferdinand should submit a watershed diagnostic plan to the DFW Lake and River Enhancement program (LARE), a LARE biologist can be reached at 317-233-1484.

LITERATURE CITED

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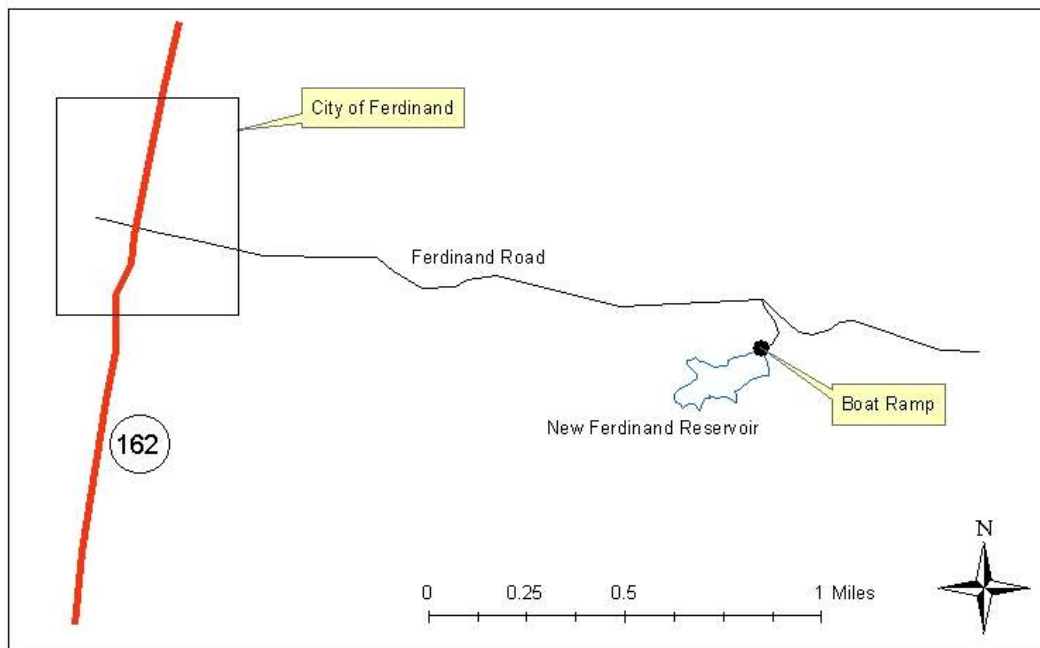


Figure 1: Map of New Ferdinand Reservoir

APPENDIX 1
FISH MANAGEMENT SURVEY DATA